AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A method for controlling a dialysis machine comprising the following steps:

providing a filter having a first and a second compartment separated by a semi-permeable membrane;

connecting to the first compartment a first circuit for a liquid, said ~~first circuit~~ liquid including a liquid component, a cellular component that is retained by the membrane, and solutes that pass through the membrane;

connecting to the second compartment a second circuit for a dialysis fluid;

circulating the liquid to be filtered in the first compartment of the filter;

causing a controlled flow of the liquid component and of the solutes through the membrane;

determining a value of a first parameter correlated with the controlled flow of the liquid component through the membrane;

determining a value of a second parameter correlated with the flow of the liquid component at an inlet of the first compartment, said second parameter being at least one selected in the group comprising: hematocrit, hemoglobin, blood viscosity, blood electrical conductivity, and blood density;

calculating a filtration factor as a function of the value of the first and second parameters; and

controlling the flow of the liquid component through the membrane or an inlet flow of the liquid to be filtered as a function of the filtration factor.

2. (Previously Presented) A method according to claim 1, further comprising the steps of:

checking whether the filtration factor has a predetermined relation with a limit value of admissibility; and

generating a signal indicating the result of the verification.

3. (Previously Presented) A method according to claim 1, wherein the first parameter is an ultrafiltration rate and the second parameter is a plasma flow rate.

4. (Previously Presented) A method according to claim 3, wherein the step of determining the value of a second parameter comprises the sub-steps of:

determining an inlet flow rate of the liquid to be filtered; and

determining the concentration of the cellular component in the inlet liquid, the calculation step comprising the calculation of the filtration factor according to the formula:

$$FF = UFR/[Qb(1-Hct)]$$

where FF is the filtration factor, UFR is the ultrafiltration rate, Qb is the inlet flow rate of the liquid to be filtered, and Hct is the concentration of the cellular component in the inlet liquid.

5. (Previously Presented) A method according to claim 4, wherein the checking step comprises checking whether the filtration factor is below a predetermined maximum threshold value.

6. (Currently Amended) A method according to claim 4 or 5, wherein the step of determining the concentration ~~Hct~~ of the cellular component comprises measuring a hemoglobin value and dividing the hemoglobin value by a constant coefficient.

7. (Previously Presented) A method according to claim 1, further comprising the steps:

detecting pressure values at the inlet of the first compartment and an outlet of the first compartment and pressure values at an inlet and an outlet of the second compartment;

calculating an inlet transmembrane value as the difference between the pressure value at the inlet of the first compartment and the pressure value at the outlet of the second compartment and an outlet transmembrane value as the difference between the pressure value at the outlet of the first compartment and the pressure value at the inlet of the second compartment;

checking whether the inlet and outlet transmembrane values satisfy predetermined relations with respective threshold values; and

generating a signal indicating the result of the checking step.

8. (Previously Presented) A method according to claim 1, further comprising the steps of:

detecting pressure values at the inlet of the first compartment and an outlet of the first compartment and pressure values at an inlet and an outlet of the second compartment;

calculating an inlet transmembrane value as the difference between the pressure value at the inlet of the first compartment and the pressure value at the outlet of the second compartment and an outlet transmembrane value as the difference between the pressure value at the outlet of the first compartment and the pressure value at the inlet of the second compartment;

calculating an average transmembrane value between the inlet transmembrane value and the outlet transmembrane value;

calculating a value of the actual permeability as the ratio of the value of the first parameter to the average transmembrane value;

checking whether the actual permeability value satisfies a respective predetermined relation with respect to threshold values; and

generating a signal indicating the result of the checking step.

9. (Currently Amended) A dialysis machine for treatment of a liquid to be filtered, comprising a liquid component, a cellular component and solutes, the machine comprising:

a filter having a first and a second compartment separated by a semi-permeable membrane;

a first circuit for the liquid to be filtered, comprising a liquid inlet line connected to an inlet of the first compartment and a liquid outlet line connected to an outlet of the first compartment;

a second circuit for a dialysis fluid comprising a dialysis liquid inlet line connected to an inlet of the second compartment and a dialysis liquid outlet line connected to an outlet of the second compartment;

a first pumping apparatus connected to the first circuit for circulating the liquid to be filtered through the first compartment;

a second pumping apparatus connected to the second circuit for circulating a dialysis fluid in the second compartment and for causing a flow of part of the liquid component and of the solutes through the membrane;

a detector ~~for detecting~~ configured to detect the value of a first parameter correlated with the controlled flow of the liquid component through the membrane and ~~for detecting~~ configured to detect the value of a second parameter correlated with the flow of the liquid component at the inlet of the filter, said second parameter being at least one selected ~~in~~ from the group comprising: hematocrit, hemoglobin, blood viscosity, blood electrical conductivity, and blood density;

a first calculator ~~for calculating~~ programmed to calculate a filtration factor as a function of the value of the first and second parameters; and

a first controller ~~for controlling~~ programmed to control the flow of the liquid component through the membrane or the inlet flow of the liquid to be filtered as a function of the filtration factor.

10. (Currently Amended) A dialysis machine according to claim 9, further comprising:

a first comparing device ~~for comparing~~ programmed to compare the filtration factor with a limit value of admissibility; and

a signaling device ~~for generating~~ programmed to generate a signal indicating the result of the comparison.

11. (Previously Presented) A dialysis machine according to claim 9 wherein the first parameter is a rate of ultrafiltration and the second parameter is a plasma flow rate.

12. (Currently Amended) A dialysis machine according to claim 9, wherein the detector detects the flow rate of the liquid circulated by the first pumping apparatus and a measurement device ~~for measuring~~ configured to measure the concentration of the cellular component, and said first calculator calculates the filtration factor according to the formula:

$$FF = UFR/[Qb(1-Hct)]$$

where FF is the filtration factor, UFR is the ultrafiltration rate, Qb is the inlet flow rate of the liquid to be filtered, and Hct is the concentration of the cellular component in the inlet liquid.

13. (Currently Amended) A dialysis machine according to claim 9 further comprising:

a first, a second, a third and a fourth pressure sensor arranged respectively on the liquid inlet line, on the liquid outlet line, on the dialysis fluid inlet line and on the dialysis fluid outlet line for generating, respectively, a first, a second, a third and a fourth pressure value;

a second calculator ~~for calculating~~ programmed to calculate an inlet transmembrane value as the difference between the first and fourth pressure values and an outlet transmembrane value as the difference between the second and third pressure values;

a comparing device ~~for comparing~~ programmed to compare the inlet and outlet transmembrane values with respective threshold values;

and a second controller ~~for controlling~~ programmed to control the first pumping apparatus and the second pumping apparatus and ~~for altering~~ configured to alter one of the inlet flow of the liquid to be filtered or of the controlled flow of the liquid component through the membrane when the inlet and outlet transmembrane values do not have permissible values.

14. (Currently Amended) A dialysis machine according to claim 9 further comprising:

a first, a second, a third and a fourth pressure sensor arranged respectively on the liquid inlet line, on the liquid outlet line, on the dialysis fluid inlet line and on the dialysis fluid outlet line for generating, respectively, a first, a second, a third and a fourth pressure value;

a second calculator ~~for calculating~~ programmed to calculate an inlet transmembrane value as the difference between the first and fourth pressure value and of an outlet transmembrane value as the difference between the second and third pressure value;

a third calculator ~~for calculating~~ programmed to calculate an average transmembrane value between the inlet transmembrane value and the outlet transmembrane value;

a fourth calculator ~~for calculating~~ programmed to calculate an actual permeability value as the ratio of the value of the first parameter and the average transmembrane value;

a comparing device ~~for comparing~~ programmed to compare the inlet and outlet transmembrane values with respective threshold values;

and a second controller ~~for controlling~~ programmed to control one of the first pumping apparatus and the second pumping apparatus and ~~for altering~~ configured to alter one of the inlet flow of the liquid to be filtered and the controlled flow of the liquid component through the membrane when the inlet and outlet transmembrane values do not have respective permissible values.

15. (Previously Presented) A dialysis machine according to claim 9 wherein the first pumping apparatus comprises a first pump installed in the liquid inlet line, and the second pumping apparatus comprises a second pump installed in the dialysis fluid inlet line, a third pump installed in the dialysis fluid outlet line, and a fourth pump installed in a branch of the dialysis fluid outlet line, and said first controller controls the fourth pump.

16. (Previously Presented) A method for controlling a dialysis machine comprising the following steps:

providing a filter having a first and a second compartment separated by a semi-permeable membrane;

connecting to the first compartment a first circuit for a liquid including a liquid component, a cellular component that is retained by the membrane, and solutes that pass through the membrane;

connecting to the second compartment a second circuit for a dialysis fluid;

circulating the liquid to be filtered in the first compartment of the filter;

causing a controlled flow of the liquid component and of the solutes through the membrane;

determining a value of an ultrafiltration rate of the liquid component through the membrane;

detecting a transmembrane pressure value across the membrane;

calculating a value of the actual permeability as the ratio of the value of the ultrafiltration rate to the transmembrane pressure value;

checking whether the actual permeability value satisfies a respective predetermined relation with respect to one or more threshold values; and,

generating a signal indicating the result of the checking step.

17. (Previously Presented) A method according to claim 16, wherein the transmembrane pressure value detection step comprises the following sub-steps:

determining pressure values at an inlet and an outlet of the first compartment and determining pressure values at an inlet and an outlet of the second compartment;

calculating an inlet transmembrane value as the difference between the pressure value at the inlet of the first compartment and the pressure value at the outlet of the second compartment and an outlet transmembrane value as the difference between the pressure value at the outlet of the first compartment and the pressure value at the inlet of the second compartment; and

calculating the transmembrane pressure value as an average transmembrane value between the inlet transmembrane value and the outlet transmembrane value.